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ABSTRACT

The information explosion and exponential development of information-accessing tools has had a disempowering effect on many people. A major challenge of the information-centered world is for students and teachers alike to learn how to assert responsibility and control over personal practice. Meeting this challenge may require personal reconceptualization of thinking, feeling, and acting with respect to the following aspects of teaching and learning: values and beliefs, intentions and purposes, and approaches and behavior. Selected long-term educational research projects in Australia, Denmark, and Sweden have yielded findings that have made it possible to develop a conceptualization of how teachers and students may operate to increase students' willingness and ability to take enhanced responsibility and control over their own learning. According to the conceptualization, teachers and students alike should take the following actions: acknowledge and accept their personal ignorance and the importance of active teaching and learning; seek and foster challenge in their own teaching and learning; and engage in a purposeful inquiry to generate enhanced metacognition. In addition, teachers should undertake collaborative action research, enact good teaching behavior, and set classroom teaching procedures that foster good learning behavior in students. Students should enact good learning behavior to overcome poor learning tendencies. (MN)

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Crossroads of the New Millennium

A Challenge For Teachers And Students In The 21st Century: How To Cope With Personal Ignorance And Generate Knowledge In An Information-Centred World

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Workshop 1

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Abstract

The information explosion and the exponential development of information-accessing tools has a disempowering effect on many people. It continually confronts them with the enormous imbalance between what they don't know and what they feel they really know and understand. A major challenge of the information-centred world is for both students and teachers to learn how to assert responsibility and control over personal practice. This challenge may require personal reconceptualisation of thinking, feeling and acting, with respect to each of three aspects of teaching and learning: Values and Beliefs; Intentions and Purposes; Approaches and Behaviour. In this presentation, findings from some long-term educational research projects are used to present a conceptualisation of how teachers and students may operate to increase students' willingness and ability to take enhanced responsibility and control over their own learning. Each aspect of teaching and learning above will be considered in relation to some selected key constructs, and workshop activities will enable participants to apply the ideas in practice, and to seek coherence between the aspects in order to guide personal practice.

This paper provides an outline to consider and discuss a conceptualisation of quality in teaching and learning. The conceptualisation builds upon findings from collaborative, school-based research between practising school teachers and university academics over a more than fifteen year period, mainly in Australia but also, in the last six years, in Sweden and Denmark. The major research project concerned is the Australian *Project for Enhancing Effective Learning* (PEEL) and its Swedish version, PLAN *(Projekt för Lärande under eget Ansvar)*. Space here does not permit detailed description of the nature of this research, which is available elsewhere (e.g. Baird and Mitchell, 1986; Baird and Northfield, 1992, Baird, 1999). Instead, some fundamental ideas that arise from the research will be summarised by means of some key figures that will serve as the focus for the discussion.

The principle figure is Figure 1 below. This figure emphasises the importance for quality practice of coherence among three aspects of thinking, feeling and acting during teaching or learning. These aspects, entitled *Values and Beliefs*, *Intentions and Purposes*, and *Approaches and Behaviour*, are shown, together with some major ideas or constructs related to each aspect. Some of these ideas and constructs will be discussed in detail: for Values and Beliefs - *Ignorance* and *Active Learning*; for Intentions and Purposes – *Challenge* and

Metacognition; for Approaches and Behaviour – *Good Teaching Behaviour, Good Learning Behaviour,* and *Classroom Teaching Procedures.*

A Challenge for Teachers and Students in the 21st Century: How to Cope with Personal Ignorance and Generate Knowledge in an Information-Centred World

ASPECT OF TEACHING	FOCUS FOR OWN TEACHING – TO:	FOCUS FOR STUDENTS' LEARNING - TO:
1 Values and Beliefs	Acknowledge and accept personal *Ignorance;* Acknowledge the importance of "*Active Teaching*".	Acknowledge and accept personal *Ignorance;* Acknowledge the importance of "*Active Learning*".
2 Intentions and Purposes	Seek and foster *Challenge* in own teaching and in students' learning; Take increased responsibility and control over own teaching, through a process of *Purposeful Enquiry (reflection and action)* to generate enhanced *metacognition*. Foster a similar process and outcome for students in their learning. Undertake on-going *Collaborative Action Research*, with teacher colleagues and with students, to enhance quality of classroom practice.	Seek and foster *Challenge* in learning. Take increased responsibility and control over own learning, through a process of *Purposeful Enquiry (reflection and action)* to generate enhanced *metacognition*.
3 Approaches and Behaviour	Enact *Good Teaching Behaviour*. Set particular *Classroom Teaching Procedures* that foster *Good Learning Behaviour* in students.	Enact *Good Learning Behaviour* to overcome *Poor Learning Tendencies*.

SELF-REGULATED TEACHING

SELF-REGULATED LEARNING

Figure 1: Integrating Thinking, Feeling And Acting in Teaching and Learning

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Next, some features of each aspect will be considered in turn.

ASPECT A (VALUES/BELIEFS): IGNORANCE AND ACTIVE LEARNING

Ignorance

One crucial value or belief is to acknowledge and effectively remedy *Ignorance*. As will be discussed, ignorance - not knowing something or how to do something - is a common feature of learning, but one that may generate significant negative metacognitive, affective, and volitional implications. Some types of ignorance are considered below, but a term crucial to effective learning should first be defined: this term is *metacognition*. I define metacognition as having three components: *metacognitive knowledge* (knowledge of the nature of learning, effective learning techniques, and personal learning characteristics); *metacognitive awareness* (of task nature and progress - essentially knowing what you are doing and why you are doing it) and *metacognitive control* (making productive decisions about approach, progress and outcomes) (e.g. Baird, 1991). As will become clear, metacognition is a key component of self-regulated learning, where learners are both willing and able to take responsibility and control over personal practice.

Ignorance is important because it is commonplace for all of us; indeed, it is more commonplace to be ignorant of something than to truly understand it. As important as ignorance, however, is whether or not you are aware of it. Sometimes you do realise that you don't know something, sometimes you are unaware of it. Knowing that you don't know or can't do something is prerequisite to effective learning. Indeed, it signifies one aspect of *metacognitive awareness* that, in turn, is necessary for metacognitive control over learning. Alternatively, you may not know that you don't know or can't do something. In this situation, you are metacognitively unaware - a term that has been entitled secondary ignorance. Thus, primary ignorance, not knowing something or how to do something, is cognitive; secondary ignorance, unawareness of this lack of knowledge, is metacognitive.

Undesirable learning situations may be associated with both metacognitive awareness and unawareness of cognitive ignorance. Many metacognitively aware students may be disinclined to act to convert their ignorance into understanding. The basis for this inaction is often affective rather than cognitive – the learner mistakenly relates ignorance with stupidity, and consequently decides not to reveal ignorance for fear of appearing foolish.

The other undesirable learning situation, where the learner is metacognitively unaware of the nature and extent of personal cognitive ignorance, is one of inadequate willingness and ability to achieve desirable learning outcomes. One type of metacognitive unawareness is when you don't realise that you don't know or can't do something. This unawareness may arise from inaccuracy - for instance, when you think you know what you are doing when in fact you don't. This situation often involves the setting of unproductive learning goals. A similar but different type of metacognitive unawareness is if you don't know whether you do or don't know something (you can't call the information to mind, even if only temporarily). Here, motivation would be expected to be low and emotions negative, because you don't know what to do next.

The need to acknowledge and remedy ignorance has been accepted by many PEEL teachers in how they construct their classroom environments. The central focus of promoting a climate of inquiry by fostering and reinforcing students' question asking necessitates action to preempt any pejorative reactions if students reveal personal ignorance or uncertainty. Thus, many PEEL teachers promote a climate in which it is "O.K. not to know" by enforcing rigidly a classroom rule of never permitting "put downs". Further, teachers set out to provide opportunities for students to practice applying strategies to identify and deal effectively with task-centred and learner-centred ignorance, as will be discussed.

Active Learning

There would be few teachers who would not value *Active Learning* highly for promoting desirable educational outcomes. The nature of such active learning – what it is, how it is exemplified in the behaviour of students - remains problematic for many teachers, however. In Table 1, I propose four major types of active learning (1, 2a, 2b, and 3) and arrange them taxonomically. These types differ in the level of reflection-driven enquiry by the learner, the breadth of such reflection, the levels of metacognitive awareness and control, and the extent of learner self-regulation. I argue that, over time and task, desirable learning subsumes all four types, but that many teachers limit their aspirations for their students' learning to the lower levels of the active learning hierarchy.

Table 1: Proposed Four Types of Active Learning

Type Of Active Learning	Nature of "Active" in Active Learning	Major Strategy	Reflection	Metacognition
1	Receptive; Compliant	Answering questions	Uniformly low	Limited at best to metacognitive awareness of whether specific content is known. Essentially no metacognitive monitoring or control
2a	Curious; task-centred	Asking questions to find out knowledge required to complete task component	Focus exclusively upon task component	Clearly task-determined. Awareness and control narrow in scope.
2b	Curious; task-centred	Asking questions centred upon completion of whole task. Questions are broadly strategic and managerial	Focus on progress through task. Broader in scope than for Type 2a.	Clearly task-determined. Awareness and control concern general task completion.
3	Curious; learning-centred	Asking questions that evaluate nature, purpose, and progress of learning	Reflection situates task within general learning context.	Related to taking responsibility and control over learning, and setting worthwhile general learning goals.

Type 1 is clearly distinguished from the higher types. For Type 1 Active Learning, the term "active" connotes compliant attention and application to the work, but such application is limited to answering questions or completing tasks set by the teacher. For this type, to be

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active is to be conscientious and busily engaged, but not, in Bruner's term, "to go further than the information given". In contrast, Types 2 and 3 learning centre upon proactive, purposeful enquiry that is initiated by question asking. Increasingly in these levels, activeness connotes curiosity - a striving to make sense - that fosters personal responsibility and control over personal practice. The types of active learning included in Table 1 provide an important frame for distinguishing PEEL teaching from other types of teaching, as will be mentioned later.

ASPECT 2 (INTENTIONS/PURPOSES): PERCEIVED CHALLENGE

An important intention or purpose for all teachers is to motivate students so as to "get them on task"; to be willing participants in what is to be done, and to set worthwhile learning goals. A construct that emerged from a four-year Australian project entitled *Teaching and Learning Science in Schools* (TLSS; e.g. Baird, 1994) provides a perspective for setting motivation within a frame for teacher action. This construct is perceived Challenge, that comprises both a thinking (cognitive/metacognitive) Demand component and a feeling (affective) Interest/Motivation component (Baird, 1994). Students want to be challenged by the work they do but, for a task to be perceived by the learner as productively challenging, both Demand and Interest/Motivation must be at desirable levels. The TLSS research demonstrated that various classroom factors influence extent of perceived challenge. These factors include amount, difficulty, and novelty/variety of the work, extent of physical and mental involvement, and opportunities to choose nature of topic and activity (Baird and Penna, 1997).

ASPECT 3 (APPROACHES/BEHAVIOUR): GOOD TEACHING BEHAVIOUR, GOOD LEARNING BEHAVIOUR, CLASSROOM PROCEDURES

Good Teaching Behaviour

In teaching, a teacher enacts classroom behaviour (Aspect 3) that reflect his or her underlying pedagogical attitudes, values and beliefs (Aspect 1), operationalised in terms of general teaching purposes and specific task-related goals (Aspect 2).

In this section, I summarise some research that focuses upon teachers' conceptions of behaviour that characterise "good" teaching. For PEEL teachers, it might be expected that such behaviour would be those that foster students' metacognitive awareness and control over personal practice and thereby lead to enhanced understanding and enjoyment. What do

other teachers believe? For both types of teacher, conceptions were elicited through their responses to a questionnaire. An analogous questionnaire explored students' conceptions of quality.

Almost 400 practising teachers (PEEL teachers; non-PEEL secondary teachers; tertiary teacher educators) and teachers-in-training responded to a questionnaire that listed 72 classroom behaviour. Respondents prioritised each behaviour according to one of three categories: as **Crucial** to good teaching; as **Desirable but Not Essential** for good teaching; as **Not Significant or Relevant** to good teaching. Additionally, teachers who either were active PEEL teachers, or knew about PEEL, picked their "top ten" behaviour - those that they considered especially important for PEEL teaching.

Of the overall 72 behaviour, a mean of between 44 and 50 (depending on the respondent group) was scored as crucial for good teaching! This result emphasises the complex and multiple nature of quality teaching. PEEL-related teachers' priorities for the most important behaviour for good PEEL teaching were, in rank order:

- Takes risks in teaching in order to trial better techniques
- Employs a range of teaching strategies
- Promotes a reflective attitude by students to themselves and their work
- Promotes linking of ideas in learning (e.g. through concept maps)
- Actively promotes conditions where students can ask questions
- Caters for individual differences among students; tries to extend their learning and understanding
- Is flexible - changes teaching approach/strategies as required
- Encourages and supports students
- Shows respect for students and their needs and concerns
- Demonstrates enthusiasm for subject and the work done
- Uses strategies that foster students' self-esteem and confidence

These behaviour can be categorised as: those with a significant *cognitive/ metacognitive (thinking)* component; those with a significant *affective/prosocial (feeling)* component; those with a significant *volitional (acting to follow something through)* component. According to this categorisation, of the twenty behaviour selected most commonly, 9 items were significantly affective (e.g. "Encourages and supports students"), 4 were significantly volitional (e.g. "Is flexible - changes teaching approach/strategies as required"), and 7 were

significantly cognitive/metacognitive (e.g. "Promotes linking of ideas in learning"). In terms of the PEEL project, this result provides corroboration of the central desire of many PEEL teachers to stimulate students' *willingness* (13 items) and *ability* (7 items) to reflect about their learning.

A revised teacher questionnaire was completed by 127 teachers at 10 schools. None of these teachers was a PEEL teacher or had any significant knowledge of PEEL. Thus, results from this questionnaire provide an interesting view of teaching from a general, non-PEEL, perspective. For these teachers, the twelve items considered to be most important of all in characterising good teaching tended towards instruction/management/organisation rather than the nature of student learning or students' learning needs:

- Encourages and supports students
- Provides clear purposes/ instructions for work to be done
- Demonstrates enthusiasm for subject and the work done
- Maintains class discipline
- Doesn't "put down" any student
- Uses language that students can understand
- Regularly monitors students' understanding and gives regular, appropriate and prompt feedback on progress
- Employs a range of teaching strategies
- Has high (but potentially achievable) expectations of students
- Applies discipline fairly

Finally, a student questionnaire was completed by almost 1,700 Grade 7 - 11 students in thirteen Victorian government and independent schools. The items chosen by students most commonly as important for good teaching were:

- Encourages me in what I try to do
- Makes me feel it is always O.K. to ask questions in class
- Helps me to understand what I am supposed to do and why
- Speaks in a way that I understand
- Shows a thorough understanding of the topics he/she teaches
- Encourages me to believe that I can do the work
- Encourages me to think carefully about the work I am doing
- Expects me to achieve as much as I can
- Doesn't put me down

- Gives us tasks to do that make us think in a variety of ways
- Pays attention to what I say or do in class

From the student' viewpoint, therefore, actions taken by the teacher to directly assist them, cognitively and affectively, in their learning are the ones that they value most highly.

Good Learning Behaviour and Desirable Classroom Teaching Procedures

In discussion, I will describe some key "*Good Learning Behaviour*" (GLBs) that PEEL teachers have tried to encourage in their students. Application of these behaviour help students to achieve good levels of metacognitive awareness and control over learning, and generate enhanced self-confidence. It will be noted that such behaviour markedly emphasise active learning types 2 and 3, rather than type 1.

PEEL teachers have attempted to stimulate such GLBs by systematically applying particular *classroom teaching procedures*. Examples of such procedures will be considered in the discussion, in order to demonstrate how a teacher may organise his or her teaching in terms of a "learning agenda" for the students, whereby students undergo progressive development in their competence and confidence in learning.

QUALITY IN THINKING, FEELING AND ACTING: SELF-REGULATION AS A GOAL FOR EDUCATION

Based upon findings of PEEL over fifteen years and data arising from complementary projects as TLSS, the conceptualisation of quality teaching and learning presented above highlights the multiple nature of these processes and, particularly, the integration of thinking (cognition/metacognition), feeling (affect), and acting (e.g. volition) for both self-regulated teaching and self-regulated learning.

Usually, good teaching constitutes purposive action - it is the product of a thoughtful, considered, approach. In this article, I have argued that good teaching requires productive integration of three aspects of teaching: Values/Beliefs; Intentions/Purposes; Approaches/Behaviour. Such integration is difficult as it requires the teacher to clarify and articulate fundamental elements of professional thinking, feeling and acting.

In summary, the PEEL project provides some insights into the nature of quality teaching and how such teaching may be enhanced. It informs us about the nature of self-regulated

learning, both by students as they learn and by their teachers as they teach. Three inter-related features stand out: the teacher developing a long-term strategic *teaching* agenda, based directly on progressive developments in students' *learning*; this teaching-for-learning agenda involving the promotion of *active learning* types 2 – 3; these attempts by teachers to improve learning occurring through collaborative action research with other teachers. Such learning will directly assist students in the 21st Century to develop the competence and the confidence to effectively replace personal ignorance with understanding.

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